Relationship between Belief System and Depression with Anxiety among Undergraduate Students in Yemen

• 1-Introduction ----Figure
• 2- Model of Irrational Beliefs for Emotional Disturbances -Figure
• 3-Research Hypotheses- Figures
• 4-Instrument-Figures
• 5-Sample – Tables
• 6-Data Analysis –Tables
• 7-Normative Data
• 8-Results-Figures
• 9-Discussion
• 10-Suggestions for Future Research
Introduction

11 Irrational Beliefs

4 Irrational Processes

6 Areas of Irrationality

Rationality

Self-Downing Approval / Achievement

Other-Downing Fairness / Comfort

Scales

IBT-RBI

SPB-ABI

GABS

Figure 1: Refinements to Rational Emotive Behavior Theory (REBT)
Model of Irrational Beliefs for Emotional Disturbances

Figure 2: Model of Irrational Beliefs (REBT) for Emotional Disturbances
Research Hypotheses:

- **Model 1: full fledged higher Confirmatory Factor Analysis (CFA)**
- Model 1 (Figure 3) stated that there was one higher order factor labeled, Irrational Beliefs, which was defined by the seven (Rationality, Need for Achievement, Need for Approval, Demand for Comfort, Demand for Fairness, Self-Downing and Other-Downing), correlated lower order factors. **Manifest variables** were labeled according to Bernard's labeling of the seven subscales of the General Attitude and Belief Scale (GABS) (Bernard, 1990). Goodness of fit score will be perfect fit for the hypothesized model in Yemeni sample (non-significant Chi-square, CFI 1.00, NFI, 1.00 and RMSEA .000).

![Figure 3: Hypothesized Model of A Single General Factor of Irrational Beliefs](image-url)
Research Hypotheses:

- Model 2: full fledged higher Confirmatory Factor Analysis (CFA)
- Based on Ellis’s classification for irrational beliefs, measurement model (2) states that there are the two second order factors of irrational beliefs, Ego Anxiety (EA) and Discomfort Anxiety (DA) (Figure 4). Need for Approval, Need for Achievement and Self-Downing are hypothesized to load on Ego Anxiety. Other-Downing, Demand for Comfort and Demand for Fairness are hypothesized to load on Discomfort Anxiety. Inter-Factor correlation between Ego Anxiety and Discomfort Anxiety will be statistically significant with statistically practical importance. The hypothesized measurement mode will have an adequate goodness of fit score for the current sample from undergraduate students in Taiz University in Yemen.

Figure 4: Hypothesized Model of Two-Factor Model of Irrational Beliefs
Research Hypotheses:

• **Model 3: full fledged Structural Equation Modeling (SEM)**
• **Goodness of Fit Score**

\[ H1 : \text{Non-significant Chi-square, CFI (.90--1), NFI (.90--1) and RMSEA (.08--.000)} \]

*Figure 5: Hypothesized Model of Irrational Beliefs for Emotional Disturbances*
1-General Attitude and Belief Scale (1988) (55 Items)
- Approval Need - 7 Items
- Achievement Need - 9 Items
- Fairness Demand - 9 Items
- Comfort Demand - 9 Items
- Self-Downing - 9 Items
- Other-Downing - 3 Items
- Rationality - 9 Items

2-Beck’s Depression Inventory (1997) (21 Items)
- Negative Attitude - 10 Items
- Performance Difficulty - 7 Items
- Somatic Elements - 4 Items

3-Social Phobia Inventory (2000) (17 Items)
- Fear - 7 Items
- Avoidance - 5 Items
- Physical Symptoms
Table 1: The Distribution of Students across Faculties and Gender

<table>
<thead>
<tr>
<th>Faculty</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - The Art Faculty</td>
<td>31 (6.8%)</td>
<td>69 (15.1%)</td>
<td>100 (100.0%)</td>
</tr>
<tr>
<td>2 - The Education Faculty</td>
<td>131 (28.7%)</td>
<td>108 (23.7%)</td>
<td>239 (52.4%)</td>
</tr>
<tr>
<td>3 - Academic Development Centre</td>
<td>85 (18.6%)</td>
<td>32 (7.0%)</td>
<td>117 (25.7%)</td>
</tr>
<tr>
<td>Total</td>
<td>247 (54.2%)</td>
<td>209 (45.8%)</td>
<td>456 (100.0%)</td>
</tr>
</tbody>
</table>

The multivariate significant differences using MANOVA model (table 2) were found among the variables: in need for approval, demand for comfort, demand for fairness and depression with social anxiety across male and female students.

Table 2: Estimated Marginal Means

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Gender</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rationality</td>
<td>1-Male</td>
<td>31.41</td>
<td>4.52</td>
</tr>
<tr>
<td></td>
<td>2-Female</td>
<td>32.18</td>
<td>4.42</td>
</tr>
<tr>
<td>Self-Downing</td>
<td>1-Male</td>
<td>23.59</td>
<td>5.75</td>
</tr>
<tr>
<td></td>
<td>2-Female</td>
<td>22.88</td>
<td>5.71</td>
</tr>
<tr>
<td>Achievement Need</td>
<td>1-Male</td>
<td>31.32</td>
<td>4.97</td>
</tr>
<tr>
<td></td>
<td>2-Female</td>
<td>32.52</td>
<td>4.94</td>
</tr>
<tr>
<td>Approval Need ***</td>
<td>1-Male</td>
<td>23.59</td>
<td>4.54</td>
</tr>
<tr>
<td></td>
<td>2-Female</td>
<td>25.54</td>
<td>4.35</td>
</tr>
<tr>
<td>Comfort Demand***</td>
<td>1-Male</td>
<td>31.45</td>
<td>5.50</td>
</tr>
<tr>
<td></td>
<td>2-Female</td>
<td>33.12</td>
<td>5.10</td>
</tr>
<tr>
<td>Fairness Demand***</td>
<td>1-Male</td>
<td>33.40</td>
<td>5.38</td>
</tr>
<tr>
<td></td>
<td>2-Female</td>
<td>35.76</td>
<td>4.92</td>
</tr>
<tr>
<td>Other-Downing</td>
<td>1-Male</td>
<td>9.16</td>
<td>2.48</td>
</tr>
<tr>
<td></td>
<td>2-Female</td>
<td>9.65</td>
<td>2.53</td>
</tr>
<tr>
<td>Depression***</td>
<td>1-Male</td>
<td>13.99</td>
<td>9.146</td>
</tr>
<tr>
<td></td>
<td>2-Female</td>
<td>16.58</td>
<td>9.106</td>
</tr>
<tr>
<td>Social Anxiety***</td>
<td>1-Male</td>
<td>22.12</td>
<td>10.29</td>
</tr>
<tr>
<td></td>
<td>2-Female</td>
<td>27.74</td>
<td>10.59</td>
</tr>
</tbody>
</table>

*** The mean difference is significant at the .005 level.
Data Analysis

- SPSS and Amos 16
- Amos can visualize results (Figures) - Easy to understand results

### 1-Assessment of Model

<table>
<thead>
<tr>
<th>Goodness -of –Fit Indices</th>
<th>Function (Fit)</th>
<th>Significance Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-Chi-square</td>
<td></td>
<td>p&gt;.05 or p&lt;.05</td>
</tr>
<tr>
<td>2-Comparative Fit Index (CFI)</td>
<td>Null Model –Less Than .90</td>
<td>.90-1</td>
</tr>
<tr>
<td>3-Normed Fit Index (NFI)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4- Room Mean Squared Error of Approximation /Application (RMSEA )</td>
<td>Generalize results</td>
<td>.08-.000</td>
</tr>
</tbody>
</table>

### 2- Covariance -------Meaning
### 3A- Factor Loadings ---Meaning
### 3B- Path Analysis – Total Variance –SEM
Construct Reliability

<table>
<thead>
<tr>
<th>Sum of Standardized Factor Loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sum of Standardized Factor Loadings + Sum of Measurement Errors</td>
</tr>
</tbody>
</table>

Factor Loadings and Construct Reliability are the two basic elements for Construct Validation (Hair, 2006).

**Discriminant Validity**

<table>
<thead>
<tr>
<th>Sum of Squared Factor Loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sum of Squared Factor Loadings + Sum of Measurement Errors</td>
</tr>
</tbody>
</table>
Normative Data (Assumptions of CFA and SEM)

- **Outliers** were not observed in all cases in the three models. Both P1 and P2 were above .001.

- **Skewness and kurtosis** of six irrational beliefs, rationality and five categories of social anxiety and depression equal to .0. Briefly, the data were drawn from a normally distributed population.
Results

Model 1

Chi-square = 5.936
df = 6
P = 0.430
N = 456
CFI = 1.000
NFI = 0.993
RMSEA = 0.000

They indicate the hypothesized model fit perfectly data
and the Model is statistically Significant.

Construct Reliability = .60 ---> Moderate
Discriminant Validity = .50 ---> Good

A Single General Factor  Factor Loadings  Observed Variables  Measurement Errors  Covariance

Rationality  .13
Achievement  .39
Approval  .52
Fairness  .63
Comfort  .56
Self Downing  .01
Other Downing  .17

A Single General Factor

Irrational Beliefs

All Parameters are statistically significant (p < .000)
with exception to self-downing (p < .05).

Figure 6: Second-Order Confirmatory Factor Analysis (CFA) for Irrational Beliefs
Results

Model 2

They indicate the hypothesized model fit perfectly data and the Model is statistically Significant.

Construct Reliability for each factor is .63 & .60
Discriminant Validity for each factor is .50

chi-square=4.234
df=5
P=.516
N=456
CFI=1.000
NFI=.991
RMSEA=.000
InterFactor Correlation
Practical Importance >.20

Latent Construct (Ellis’s Classification)  Standardized Factor Loadings  Observed Variables (Ellis’s Irrational Beliefs)  Measurement Errors

Ego Anxiety

Discomfort Anxiety

Approval
Achievement
SelfDowning

OtherDowning
Comfort
Fairness

.64
.53
.33

.41
.28
.11

.38
.67
.70

.15
.44
.49

e1
e2
e3

.e.
.e.
.e.

-.22
-.38

All Parameters are statistically Significant (p <.000).

Figure 7 : Higher Order Confirmatory Factor Analysis (CFA) for Irrational Beliefs as Two - Factor Model
Results-

Model 3

chi-square = 62.940
df = 34
P = .002
N = 456
CFI = .978
NFI = .954
RMSEA = .043

They indicate the hypothesized model fit data and the Model is statistically Significant.

Figure 8: Full Fledged Structural Equation Modeling (SEM) for
Irrational Beliefs for Social Anxiety with Depression

All Parameters are statistically significant (p < .000)
Discussion

• In general, the hypothesized models contributed to show evidence for the construct validation of Rational Emotive Behavior Theory.

• The result of the Confirmatory Factor Analysis (CFA) supported the irrationality is a dimensional construct including achievement need, approval need, fairness demand, comfort demand, self-downing, other-downing, and rationality. This finding is in keeping with previous studies of irrationality in REBT (Bernard, 1998; Ellis, 1994).

• Results of correlation among irrational beliefs were positive and in agreement with previous studies (Bernard, 1998; Shaw, 1989).
• Fairness, Comfort, Approval and Achievement were high loaded on a general factor of irrational beliefs. This result is supported by REBT.

• The latent factor of Irrational Belief had statistically significant influence on self-downing, but it was the weakest influence among all irrational beliefs. Yemeni people can not express openly and frankly about self-downing. Arab culture dictated its members to repress the thoughts and emotions expressed about self-downing. It is cultural and social sigma, especially between opposite gender.

• The latent factor of Irrational Belief had the weak influence on Rationality. In reality, conceptualization of rational beliefs in REBT is still weaker than irrational beliefs. REBT leaders have paid little attention to the development of a comprehensive understanding of rational belief systems. One reasonable explanation for the positive correlation between the latent factor of irrational beliefs and rationality is that people can have concurrent irrational thoughts and rational beliefs.
• **Ego anxiety including** achievement need, approval need and self-downing was the best predictor for categories of social anxiety and depression. The second predictor was discomfort anxiety comprising comfort demand, fairness demand and other-downing.

• Moreover, both ego anxiety and discomfort anxiety created only 16% from the etiology of social anxiety and depression. For future research, what other factors lead to social anxiety and depression in Yemen is more appropriate than focusing only on irrational beliefs.

• **Moderate path analysis** for the two factors (ego anxiety .30 and discomfort anxiety.27) on categories of social anxiety with depression was in agreement with REBT assumption relevant to second-generation of Irrational Belief Scale (e.g., GABS). The basic target for designing GABS was to reduce overlap between irrational beliefs and emotional disturbances created by the first – generation of IBs (e.g., IBT) (Bernard, 1998).
• **Irrational beliefs reflected** by General Attitude and Belief Scale (GABS) were based on simple, few and repeated words. Three sentences (*I must… it is essential, I cannot stand …it is unbearable… it is awful or catastrophic if…*) were employed in six irrational belief areas on GABS.

• These words and sentences were not enough to systematically reflect a comprehensive system of irrational thoughts. Irrational beliefs as the basic target for a theory should be wide.
• **Suggestions for Future Research**

• What are the rational beliefs related to culture?
• What is determination of the role of rational beliefs in the construct of each irrational belief?
• Is there a statistically significant relationship between rational beliefs and mental health e.g., self-esteem?

• Rational Emotive Behavior Theory (REBT) was focusing much on distinction between rational preferences as the basic needs through some words (wants, wishes, hopes and desires) and irrational beliefs such as musts, shoulds, and demands). This high distinction was lacking of awareness in Arabic culture (musts refer to illogical belief and wishes refer to logical preference).

• The suggested way to estimate irrational beliefs system by assessments is using ratio after each item (20%, 40%, 60%, 80%, 100%) with five-point Likert Response scale.
• Finally, the suggested way to assess irrational beliefs is using multiple assessments created from the same culture conducted in several times on the same samples and replicating the results in another sample from the same culture.